

Exhibit T



MEETING MINUTES

Project: Governor Printz Interceptors, Section I
New Castle County Project No. 2010-01/220612

Purpose: Geotechnical Meeting

Date: Friday - May 13, 2011 - 10:00 AM

Attendees:

<u>Name</u>	<u>Company</u>	<u>Telephone</u>	<u>Email</u>
Ed Kuipers	NCC	302.395.5738	ekuipers@nccde.org
Jessie Ceglowski	AAM	610.960.0358	jessica.ceglowski@aamyers.com
Rick Tisa	AAM	N/A	rick.tisa@aamyers.com
Rich Dungan	AAM	410.776.2015	rich.dungan@aamyers.com
Bob O'Connor	PB	410.246.0532	oconnorro@pbworld.com
Jay McKelvey	Earth Engineering, Inc.	610.277.0880	jaym@earthengineering.com
Robby McDonald	PB	302.791.7773	mcdonaldr@pbworld.com
Susan MacNeil	PB	410.385.4165	macneil@pbworld.com
Emily Miley	Heery	302.791.7773	emiley@heery.com

Additional distribution:

<u>Name</u>	<u>Company</u>
David Clark	NCC
Dave Hofer	NCC
Rudy Fernandez	PB
Ron Fields	PB
Rich Donovan	AAM

Minutes:

1. PB stated that based on previous discussions, it appeared that AAM was looking for a relaxation to the project specification requirements. The purpose of the meeting was not to negotiate changes to the requirements, but rather to provide clarification on the requirements.
2. PB provided copies of photographs of AAM's trench excavation for the 36 inch interceptor taken at Stoney Creek pump station on March 2 (see attachment). The photos showed earth disturbance under the existing pavement adjacent to the trench box. PB raised concern about the potential for similar settlement under the 6-inch oxygen and nitrogen gas lines and the 24-inch natural gas line adjacent to the trench along Governor Printz Boulevard. Given the weight of the trench box and the compacted fill and the soil friction along the trench box walls, PB found it difficult to envision how AAM could remove the trench box without disturbing the compaction of the backfill and/or causing settlement outside of the trench box. PB suggested (again) that AAM install geotechnical instrumentation monitoring at the pump station in order to prove that AAM's means and methods



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for trench excavation can be accomplished without excessive disturbance, prior to conducting trench excavation within Governor Printz Boulevard.

AAM stated that doing trench work within the pump station area was a major learning curve. Sewer pipe was installed and removed several times because of unsuitable material encountered below the pipe. The pump station area was used as a former dump site and had a lot of debris. Pipe installation improved significantly after AAM was outside of the pump station area and there was no debris. There was little to no soil disturbance adjacent to the trench going up to manhole 103. AAM stated that the photos taken at the pump station are not representative of what is anticipated for the remainder of the project. AAM explained that the trench box is not pulled up vertically and completely removed. Rather, the box is pulled upward then forward in small increments. 1-½ inch thick steel plates (not sheeting) are used to support the excavation walls and a second backhoe with a vibrating plate attachment is used for compaction of the bedding stone. The trench box is not fully removed from the ground until it is no longer needed.

PB stated that the trench excavation submittal should address bending of the steel plates and should include the section modulus limitations for spanning beyond the end of the trench box with the plate steel.

3. PB stated that AAM's Excavation and Dewatering Plan was rejected because it did not include any geotechnical instrumentation for the first 1,900 LF of a 4,700 LF project. PB is not precluding AAM's means and methods, even though PB does have concerns. However, AAM is required to install instrumentation monitoring in accordance with the specifications. Even though there are higher risks for settlement upstream of station 219 because the subsurface conditions change from fine silty material to sandy material, geotechnical instrumentation needs to be installed along the entire length of the project. AAM was supposed to have instrumentation installed 30 to 60 days prior to doing any excavation work and is currently in violation of the specifications.
4. PB reiterated that groundwater drawdown and/or hydrostatic uplift is of major concern when using a trench box which provides essentially no cut off below the base of excavation. The interceptor sewer invert elevations are 10 to 15 feet below the water table. Even though the soil borings below station 219+00 indicate fine grained material, which tends to hold water, the gabbro bedrock below the soil profile may be weathered [and more pervious] along bedrock joints, in addition to which rock blasting may cause opening of those joints or additional fissuring. Such openings will be subject to high water flows, especially given the proximity [and likely hydraulic connection] to the Delaware River.

PB maintains the concern that dewatering of sandy layers beneath organic [swamp muck] deposits may initiate settlement under an effective stress increase caused by lowering the water table. And in addition pointed out that even the residual sandy soils possessing high [SPT] blow counts immediately above the corable bedrock surface, could in fact be reflecting the spheroidal weathering [along pervious bedrock joints] within [a bouldery] bedrock surface. Hydraulic connections through pervious sands and/or rock joints can both lead to uplift or sudden blow out of the excavation bottom.

AAM stated that they anticipate placing two sections of pipe a day once they are in Governor Printz Boulevard. Pumping water from within the trench box would not be in the same location over a long period of time. The water table cone of depression provided in the submittal represents long-term steady-state conditions, which will not be encountered during construction.



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EEI stated that when pumping water from within the trench box between Stoney Creek Pump Station and station 219, the fine silty material will hold its water. Even though the submittal shows a 13-foot drawdown at an influence limit of 11-feet, the well drawdown type analysis did not include the steel plates which are expected to help cut-off the flow of water. AAM added that there are no instances where the existing gas lines are closer than 7.5 feet from the pipe trench.

PB stated that the trench box will likely act as a well and that the trench box will not cut-off the water. Per OSHA requirements, AAM is permitted to excavate 2 feet below the bottom of the trench box. PB believes that there is a significant potential for drawdown of the water table. Even though AAM anticipates that localized pumping will be short-term and the excavation will move forward before steady-state conditions are established, it is difficult to predict where AAM may unintentionally get stuck during construction for some reason or another and pumping in one spot will be required for a longer period of time than originally anticipated. PB wants the instrumentation in place to monitor the water table.

AAM stated that they do not want their men working in water and that the steel plates will be used to cut-off the water, but recognized that plating is not water-tight and cannot be pushed in-place to depths comparable to interlocked sheeting.

NCC stated that they do not want sewer pipe installed when the subgrade is wet to the degree of instability. The subgrade needs to be stable to prevent the sewer pipe from deforming when the trench is backfilled. The subgrade may require [deeper] dewatering so that undercutting is not needed [to compensate for groundwater related softening or uplift of the trench base]. AAM will need to control the water by either cutting off the water or by providing dewatering.

5. AAM asked NCC about groundwater encountered during sewer construction downstream of this project. NCC stated that the subsurface materials were much different and that very little water was encountered. Much of the sewer pipe installation was using micro-tunneling.
6. AAM stated that the soil borings indicate that the subsurface materials change after station 219. AAM's Excavation and Dewatering Plan submitted on April 29 is a partial submittal and describes their plan up to station 219. EEI is installing piezometers upstream of station 219 and will run pump testing to assess drawdown. AAM does not anticipate the excavation progressing to station 219 until July.

PB stated that, per the submittal, AAM did not intend to include any monitoring until after station 219. However, instrumentation monitoring needs to be included along the entire length of the project. EEI stated that it will take them approximately a month to prepare a geotechnical submittal for upstream of station 219.

7. AAM stated that they would prefer to monitor the gas lines directly on fixed intervals with telltales rather than installing surface settlement markers and piezometers to monitor the groundwater table and asked why the specifications were not based on direct monitoring.

PB stated that the [3 different] gas lines are within a plus-or-minus range of the active pressure zone of the trench excavation and if, for instance, the nitrogen gas line was damaged, the gas, which is an asphyxiant, may sink to the bottom of the trench. Although the installation of strain gages on the gas lines was considered, the degree of previous settlement and associated pipe



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strain is unknown, in addition to which monitoring the gas lines directly, rather than the supporting soil settlement, could be misleading if the pipes were to temporarily bridge over settled soils adjacent to the trench excavation. This could easily occur, especially since the project area does not have uniform subsurface conditions. Additionally, Delmarva previously stated at a utility meeting held during design that their gas lines have a protective coating, which they do not want scratched. For these reasons, the specifications require settlement markers and piezometers rather than direct monitoring of the gas lines.

AAM reiterated that their preference is to expose and directly monitor the gas lines. The current condition of the gas lines is not known. AAM proposed to monitor the gas lines at 100-foot intervals. PB indicated that the monitoring requirements within the specifications are minimums such that all bidders would be on a level playing field and if the contractor saw additional monitoring that would limit risk the freedom would be available to provide additional monitoring.

AAM stated that trucks and heavy equipment will be using the northbound paved shoulder along of Governor Printz Boulevard. The nitrogen and oxygen gas lines are approximately 3 to 4 feet beneath the paved shoulder and the natural gas line has approximately 7 or 8 feet of cover. PB asked if the trench excavation submittal included analysis of impacts on the trench box from trucks and heavy equipment driving on the paved shoulder adjacent to the trench box. EEI stated that they will do an analysis and provide notation of any limits on the resubmittal.

AAM said that they do not see the necessity for the quantity of piezometers indicated in the project specifications. AAM stated that monitoring structures 100 feet away from the excavation is a waste of money.

PB stated that the specifications describe the minimum requirements for geotechnical instrumentation monitoring and that it is AAM's responsibility to establish the specific location of all monitoring devices. Although some aspects of monitoring, such as the installation of crack monitors, are discretionary, PB stated that there are minimum requirements for the piezometers [average 100-foot intervals] subject to the instrumentation specialist's judgement relative to the actual locations and spacings. AAM's plan to install no monitoring in the first 40 percent of the project alignment [up to station 219] does not meet the intent of the specifications. AAM will need a permit from DNREC to install the piezometers.

PB stated that if there is a problem with one of the gas lines in the future and the utility owner claims that damage was caused by construction, the instrumentation monitoring records should be sufficient to document the geotechnical conditions that existed during construction.

NCC does not want AAM to expose and monitor the gas lines instead of installing piezometers. NCC stated that they would consider a change order to include additional monitoring of the gas lines if the AAM believes that effort would be warranted.

8. PB stated that they would like to see settlement monitoring markers installed before AAM begins excavation in the roadway. PB suggested that the markers be installed in the shoulder, within the earth active pressure zone between the trench and the gas lines, every one hundred feet. AAM raised concern about settlement caused by trucks and construction equipment traveling on the northbound shoulder. *[Note: It is not feasible to run the trucks and equipment within the median area instead of on the shoulder.]* AAM stated that they do not want to install the markers in the shoulder because of the trucks. Their preference is to install them in the southbound lanes. Given



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the concern for monitoring relative to the gas lines, PB recommended coring holes in the northbound shoulder between the anticipated vehicle wheel path and installing the markers within casings, say 2 feet or so below pavement grade. AAM indicated that the blacktop is 10 or 11 inches thick in the shoulder.

9. NCC noted that the survey control has not been completed by AAM. Survey controls need to be set below the depth of excavation and on structures, including curbs and pavement. There is about a month worth of survey work that needs to be completed in order to comply with the requirements outlined in the project specifications. For example, the survey control needs to come off of a DelDOT monument. At least one deep benchmark in casing needs to be established. Control points for monitoring surface settlement monitoring markers need to be established every one hundred feet. The survey control loop needs to be closed three times. It is imperative that the survey control be established right away so that the control can be used for the geotechnical instrumentation monitoring. AAM's surveyor needs to submit a plan for the benchmarks and survey control for the engineer's review.
10. PB stated that AAM needs to provide a response action plan for instrumentation monitoring level alerts based on threshold levels listed in the project specifications.
11. Regarding re-submitting AAM's Excavation and Dewatering Plan, PB stated that it is acceptable for AAM to combine the separate geotechnical related submittals (i.e., trench excavation and backfill, control of water, and geotechnical instrumentation, but not rock blasting, which will remain its own submittal) into a single Geotechnical Plan submittal.

PB requested that AAM include information from previous geotechnical submittals into the new submittal and state that the new submittal supersedes the previous submittals so that the new submittal is comprehensive and the previous submittals can be closed out.

AAM stated that they would address each of PB's previous comments, item by item, in the new submittal.

PB also requested that if AAM prepares an analysis that supersedes manufacturer statements in the submittal, then such statements should be crossed out and initialed to avoid inconsistent or conflicting statements. For example, AAM is proposing to utilize steel plates. However, the trench box submittal states that, "the shield was designed to be used without plates extending below, above, or next to it. Any use of plates or panels may void the tabulated data, and may require site specific engineering." Same issue relative to hydrostatic pressure acting on the trench boxes. Clarifications need to be provided in the submittal.

12. There are two rock blasting zones between the Stoney Creek Pump Station and station 219, including one at station 206 and another at station 217. Seismic monitoring will be included in the Blasting Plan. The revised Geotechnical Plan will reference the Blasting Plan for details.

AAM submitted the Blasting Plan to the State Fire Marshal for review. The fire marshal has stated that they basically approve of the plan. However, the fire marshal is checking with their legal experts to make sure that they can officially approve the plan even though it does not comply with all of Linde's requirements. AAM will provide a copy of AAM's revised Blasting Plan (and a copy of the blasting permit from the fire marshal when it is available) to PB for review. PB will provide copies to DelDOT and Linde for their review.

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13. PB will also provide a copy of AAM's revised Geotechnical Plan to Linde so that they know how work will be done adjacent to their gas lines and what instrumentation is being installed to monitor subsurface conditions surrounding the gas lines.
14. AAM expressed concern about the contaminated material encountered at the pump station. NCC stated that they have discussed the arsenic levels recorded in the groundwater with the Wilmington Wastewater Treatment Plant and have obtained permission for AAM to discharge the contaminated groundwater directly into the sanitary sewer system. The levels of arsenic encountered at the pump station are fairly typical within New Castle County. AAM will be required to document contamination levels and flow rates discharged into the sewer system. NCC will prepare a letter to AAM relieving AAM of liability for the discharge into the sanitary sewer system.
15. AAM asked if the project contingency allowance was so high (\$2.7M) because of concern for contaminated materials along the project. PB stated the only known area of concern for contaminated material is at Stoney Creek Pump Station, as indicated with keynotes on the drawings. The contingency is for a multitude of possible unforeseen items, not just for contaminated materials. NCC included a high dollar amount so that sufficient funds are budgeted and available if needed.

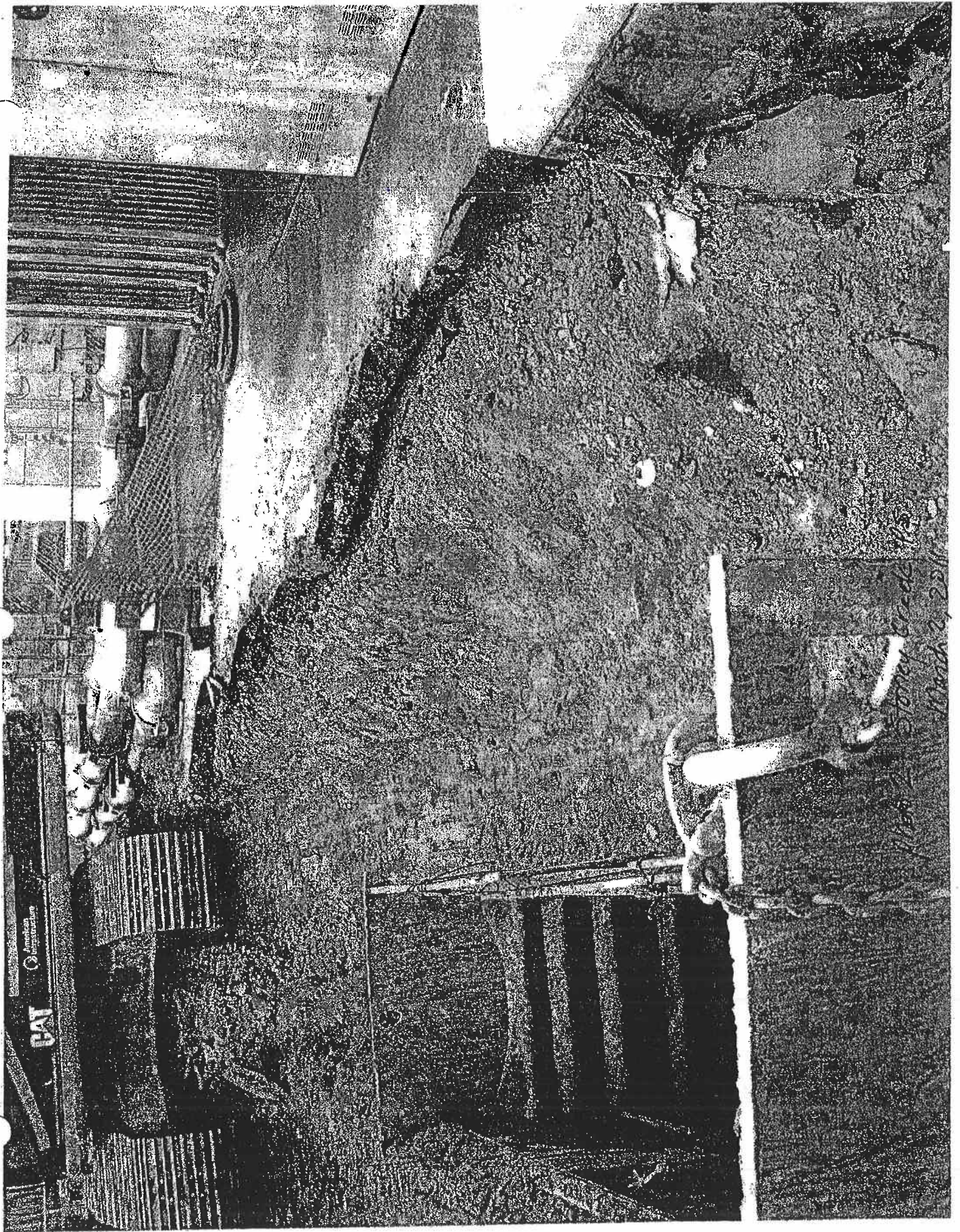
These minutes summarize PB's interpretation of items discussed and decisions reached during this meeting. Additions or corrections must be submitted in writing to the author within three days of receipt; otherwise the minutes will stand as written.

Susan MacNeil, PB Americas, Inc. – Lead Design Engineer

Attachments: Photos taken of trench excavation at Stoney Creek Pump Station on March 2, 2011 (3 photos total).



Photo 1 - Stoney Creek Pump Station
March 2, 2011



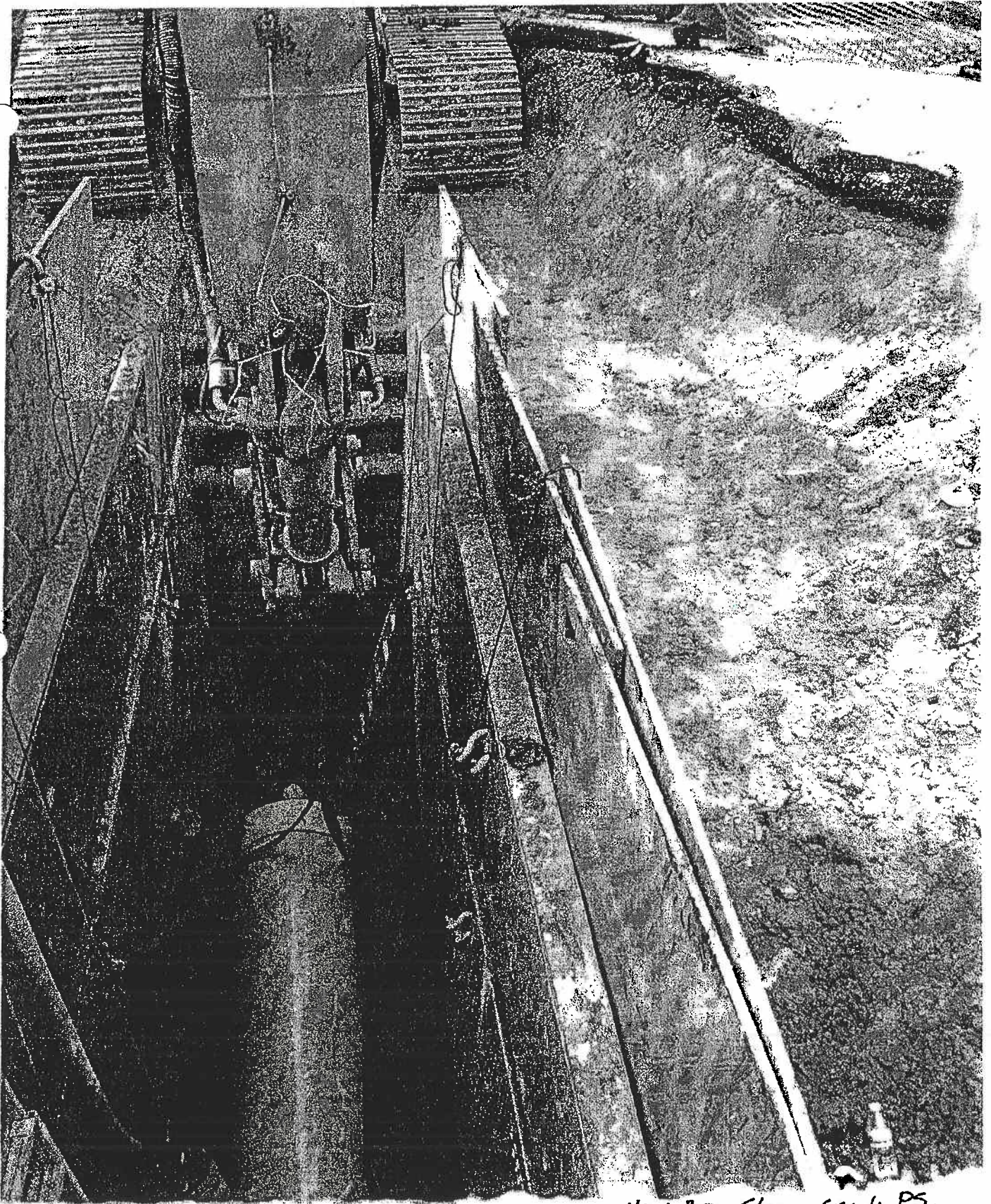


photo 3a Stoney Creek PS.
March 2, 2011